TROPICAL RAINFALL MEASURING MISSION

October 2, 2000 – October 8, 2000
DOY 276 - 282
Day of Mission 1040 - 1046

TRMM MISSION OPERATIONS

- TRMM is flying in the -X Forward direction as of October 1 (00-275) at 08:51:45z.
- Yaw maneuver #48 is scheduled for October 30 (00-304).
- Delta-V #234 is scheduled for October 10 (00-284), using the ISP thrusters.
- The Beta angle range for 00-283 to 00-289 is –32.8° to –42.1°, peaking at –43.2° on October 14 (00-288).
- The next Monthly Status Review (MSR) is scheduled for November 1 (00-306).
- The next End of Life Planning meeting is scheduled for October 25 (00-299).
- The next Flight Software CCB meeting is scheduled for October 31 (00-305).
- 84 days remain until Extended Mission science operations begin on January 1, 2001.

TRMM SUBSYSTEM OPERATIONS

Attitude Control System (ACS)

00-278 (Wednesday, October 4)
Delta-V maneuver #232 was successfully conducted at 15:42:03z and 16:27:49z for durations of 46.750 and 30.125 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#2) for burn 1 and 2 was 39.8% and 39.0% (60.2% and 61.0% on time). The remaining fuel is 520.866 kg, and the final apogee and perigee height is 354.70 km x 347.36 km.

00-280 (Friday, October 6)
Delta-V maneuver #233 was successfully conducted at 17:48:35z and 18:34:22z for durations of 40.125 and 24.875 seconds respectively, using the ISP thrusters. The off-modulation of the -Pitch thruster (#2) for burn 1 and 2 was 37.7% and 32.7% (62.3% and 67.3% on time). The remaining fuel is 519.348 kg, and the final apogee and perigee height is 354.96 km x 347.53 km.

00-282 (Sunday, October 8)
The daily EPV failed the continuity check by 16 km in the X-axis. The standard procedure of temporarily widening the continuity limits was performed and the EPV began propagating at 22:00z.

Flight Data System (FDS)/Command & Data Handling (C&DH)

The UTCF was adjusted by -907 µs on 00-282 (October 8) at 11:41:19z. The UTCF is now 31535996.837468 seconds with a current drift value of –6.0 µs. The frequency standard offset remains x'7a2' with a current drift rate of –3.72 µs/hr.

There were EDAC Multi-Bit errors on 00-279 (October 5) at 03:42:41z and 20:43:09z.

During 1/4 kbps events, the normal flight status event buffer dumps are not completing. These low data rate events are scheduled three times a week for Transponder #2 Local Oscillator Frequency trending. This problem is attributed to bandwidth limitations at these low data rates, since both PSIBs are powered ON and there are now two additional packets (PSIB-B) telemetered to the ground. PSIB-A packet counts will be reduced during low data rate events by using the telemetry output (TO) jam command.

Reaction Control Subsystem (RCS)

The RCS subsystem performed nominally during this period. See the ACS section for specific Delta-V information.

Power Subsystem

The Power Subsystem continues to operate nominally in the Peak Power Tracking mode with a voltage-temperature threshold of VT = 4. All PSIB telemetry remains stable, with all PSIB-A telemetry monitors disabled. The essential bus low voltage threshold for Low Power Mode loadshed is currently 24.7 volts, and the low state of charge monitors are using PSIB-B telemetry.

Analysis shows that the spacecraft µp current is the best choice for calculating the essential bus voltage if PSIB-B telemetry corrupts further. In addition, the new RTS #21 will keep the batteries on-line, perform a loadshed and a change to VT = 3 in case of battery high temperature detection.

The power subsystem will continue to operate in the Peak Power Tracking (PPT) mode until it is confirmed that no single failure can eliminate the ability to command the SPRU. A report addressing this is due next week. The return to Constant Current Mode (CCM-2) will limit the current into the batteries to 12 amps each and thereby reduce the chances of any future problems with battery 2 cell 1. This cell has shown that it is more sensitive to higher battery charge currents by displaying higher voltage levels than all the other cells.

Due to recent PSIB failures, battery 2 cell 1 voltage telemetry can no longer be directly monitored. The FOT now indirectly monitors this cell by watching for noticeable changes in the differential battery voltage and the Flight Software team is developing new on-board monitor points that will notify the ground if specified differential thresholds are crossed.

Electrical Subsystem

The Electrical subsystem performed nominally during this period.

Thermal Subsystem

The Thermal subsystem performed nominally during this period.

Deployables Subsystem

The Deployables subsystem performed nominally during this period.

RF/Communications Subsystem

The RF/Communications subsystem performed nominally during this period.

SPACECRAFT INSTRUMENTS

CERES

CERES remains powered OFF, following the original PSIB anomaly loadshed on 00-261 (September 16, 2000).

LIS

The LIS instrument performed nominally during this period.

PR

The PR instrument performed nominally during this period. The list of Internal Calibration times over Australia in which PR was not radiating is shown below:

2000-276/00:56:38 – 00:58:48z
2000-276/17:14:34 – 17:19:39z
2000-277/01:20:06 – 01:21:32z
2000-278/00:07:41 – 00:09:49z
2000-278/16:25:40 – 16:29:06z
2000-278/22:56:04 – 22:58:18z
2000-279/23:18:26 – 23:20:54z
2000-280/22:07:10 – 22:09:22z
2000-281/14:26:25 – 14:29:15z
2000-281/20:55:25 – 20:56:37z
2000-281/22:29:28 – 22:31:36z
2000-282/21:18:19 – 21:20:29z

TMI

The TMI instrument performed nominally during this period.

VIRS

The VIRS instrument performed nominally during this period.

GROUND SYSTEM

No new ground system issues occurred during this period.

Event Reports

ER #209: Daily EPV update continuity failure (see ACS section)

Generic Late Acquisition Reports (for TTRs 19639)

No new Generic Late Acquisitions occurred during this period.

New Anomalies

No new Anomalies occurred during this period.

Recurring/Open Anomalies

No open anomalies recurred during this period.

Prepared by:
Robert Bote
TRMM Systems Engineer

Approved by:
Lou Kurzmiller
FOT Manager